

EXHIBIT 4

Plaintiff's Disclosure of Asserted Claims and Preliminary Infringement Contentions¹

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
1. A semiconductor light-emitting device comprising:	<p><i>Accused component: Patriot Lighting 3460800 LED Black Metal Plug-in Under Cabinet Puck Light 0026-0014</i></p> <p><i>Basis of Infringement Contention: The Patriot Lighting 3460800 Under Cabinet Puck Light contains a semiconductor light-emitting device</i></p> <p><i>Photograph of Patriot Lighting 3460800 Under Cabinet Puck Light</i></p>



¹ Plaintiff provides these infringement contentions before obtaining discovery from Defendant. Plaintiff expects that Defendant and/or third parties will produce information regarding Defendant's instrumentalities beyond that which is publicly available. Accordingly, Plaintiff reserves the right to modify these infringement contentions based upon Defendant's document production and/or other information made available to Plaintiff through discovery.

Plaintiff's infringement contentions are intended to explain Plaintiff's theories of infringement and do not constitute evidence. Plaintiff's infringement contentions are not intended to set forth a *prima facie* case of infringement or evidence in support thereof. Certain portions of the chart below may apply to more than one Accused Instrumentality. Certain portions of the chart below may reference other charts, and may be referenced by other charts.

The Accused Instrumentalities often practice the claim elements in numerous alternative ways in accordance with the present chart. The Accused Instrumentalities should be assumed to act alone or in combination as referenced herein and interpreted in the singular or plural accordingly. Defendant further provides the Accused Instrumentalities as well as the instructions to customers/users causing them to use the Accused Instrumentalities in an infringing manner, including, without limitation, in their default and expected uses.

Each element of this claim, except where noted otherwise, and each element of the asserted claims dependent thereon, is present literally or under the doctrine of equivalents in the Accused Instrumentalities. To the extent each element of this claim, and the asserted claims dependent thereon are not present literally in the Accused Instrumentalities, each element is present under the doctrine of equivalents because there is no substantial difference between the elements of the asserted claims and the corresponding functionality in the Accused Instrumentality, i.e., the corresponding functionality in the accused product performs substantially the same function, in substantially the same way to achieve substantially the same results as the claimed elements.



CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Patriot Lighting 3460800 Under Cabinet Puck Light

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p>Box</p> 
	<p>Box label</p> 

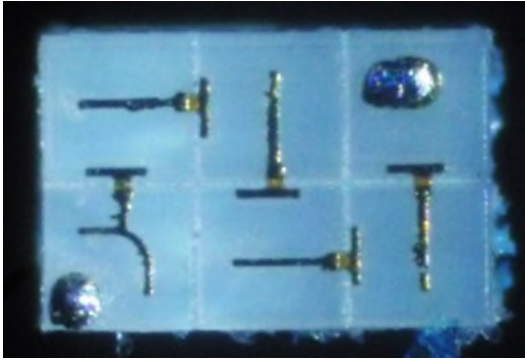
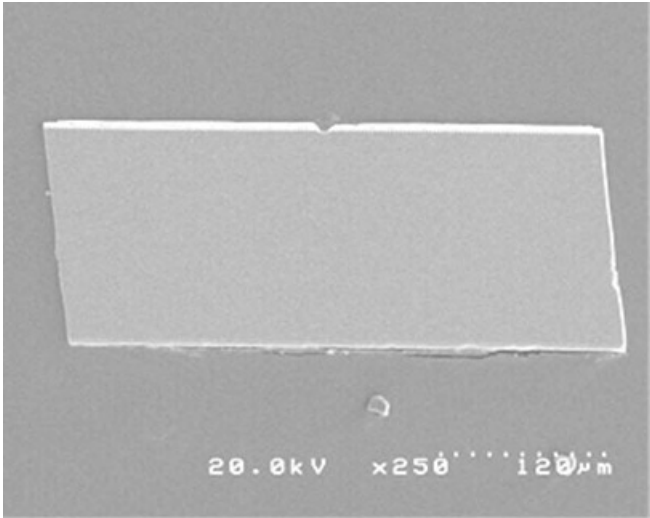
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Patriot Lighting 3460800 Under Cabinet Puck Light

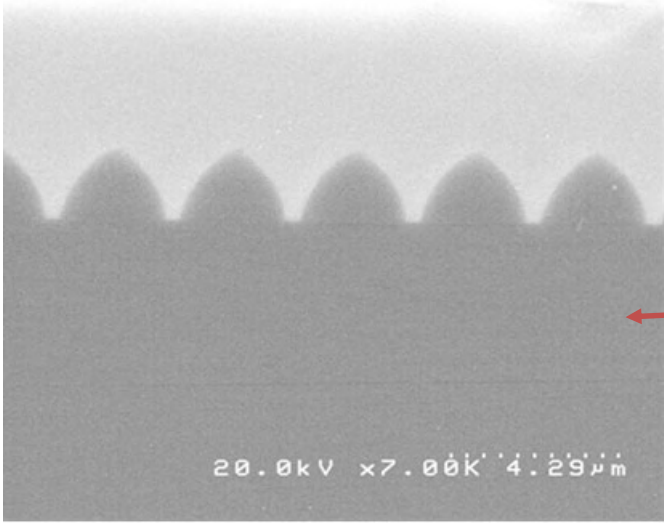
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p>Lamp</p> 
	<p>Lamp marking</p> 

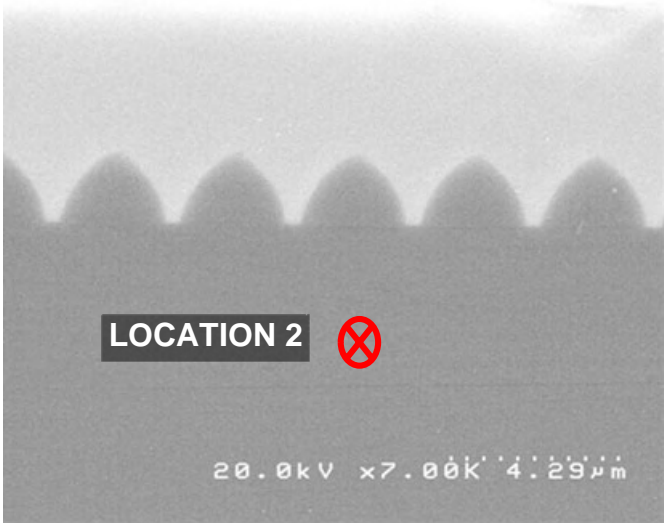
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Patriot Lighting 3460800 Under Cabinet Puck Light

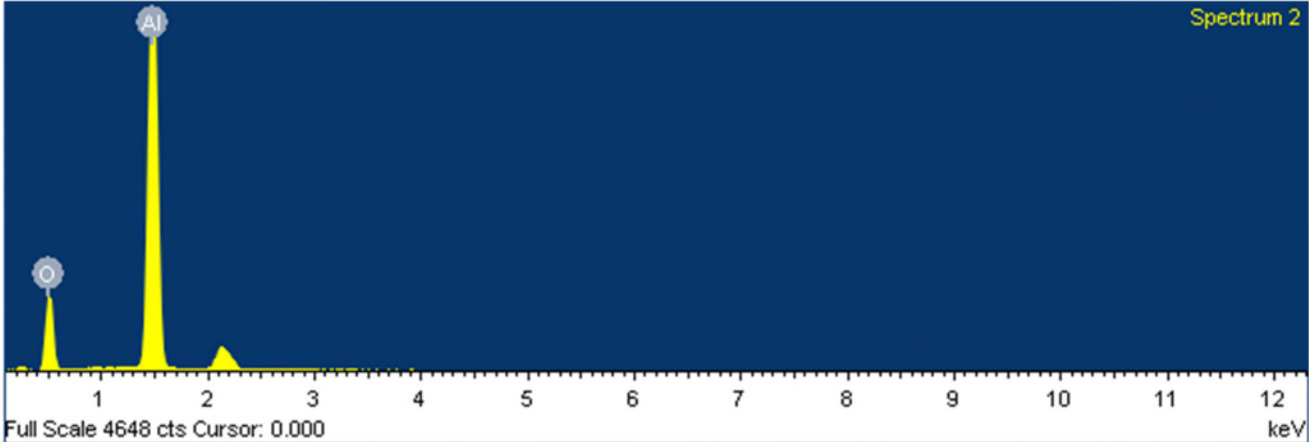
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 282 701 315">Power on</p> 
	<p data-bbox="575 786 747 818">Cap removed</p> 

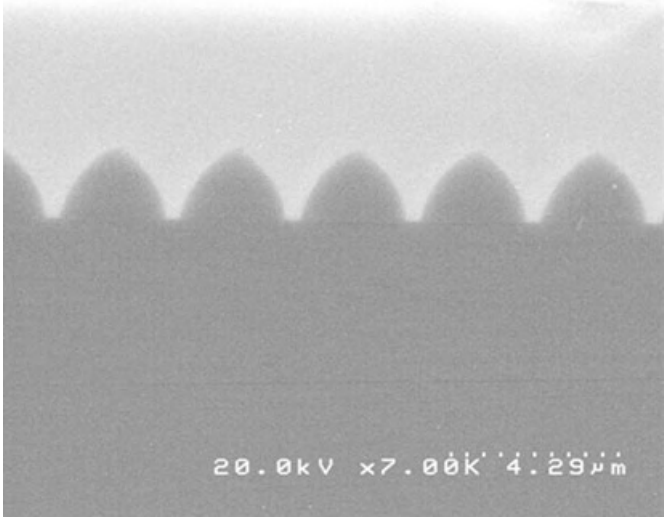
CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Patriot Lighting 3460800 Under Cabinet Puck Light

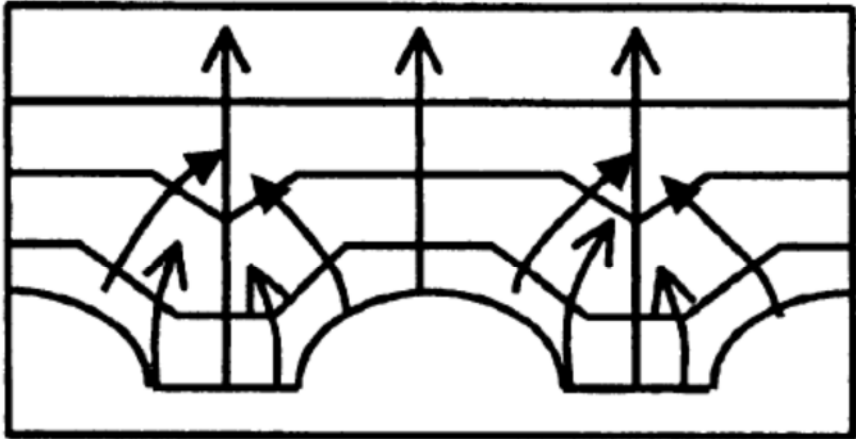
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 279 701 311">LED chip</p> 
	<p data-bbox="575 745 1436 777"><i>Scanning Electron Microscope (SEM) image of LED cross-section:</i></p> 

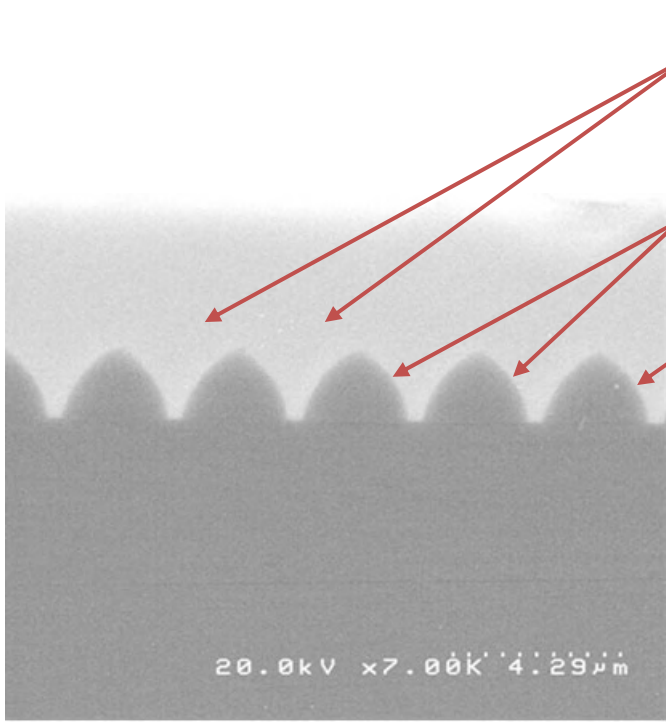
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
a substrate;	<p><i>Accused component: Substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The LED contains a substrate.</i></p> <p><i>SEM Cross-Section of the LED:</i></p>  <p>20.0kV x7.00k 4.29µm</p> <p>Substrate</p>

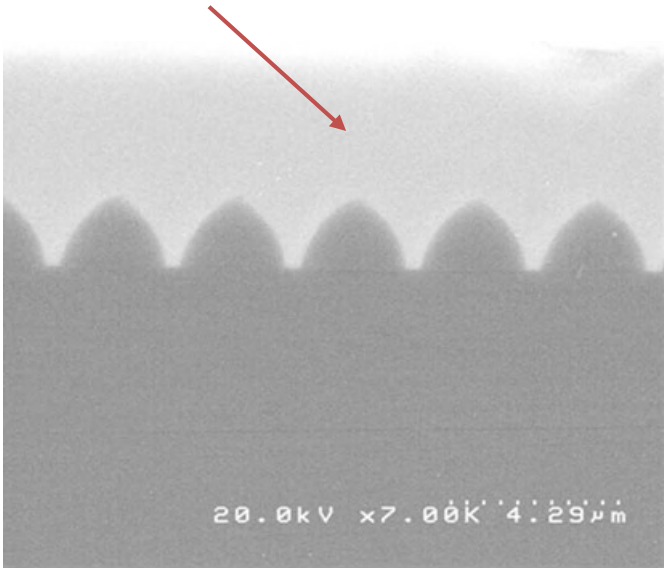
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p><i>SEM Cross-Section of the LED Identifying the Location of the EDX Measurement:</i></p> 

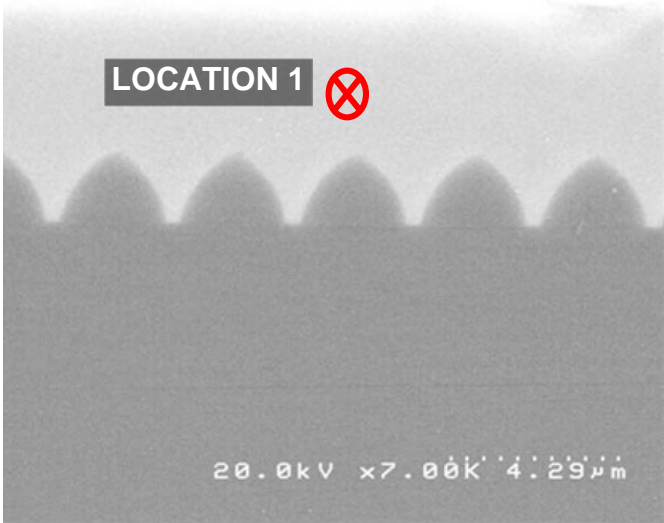
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p><i>EDX Analysis of Substrate:</i></p>  <p>Substrate is Sapphire (Al_2O_3)</p>

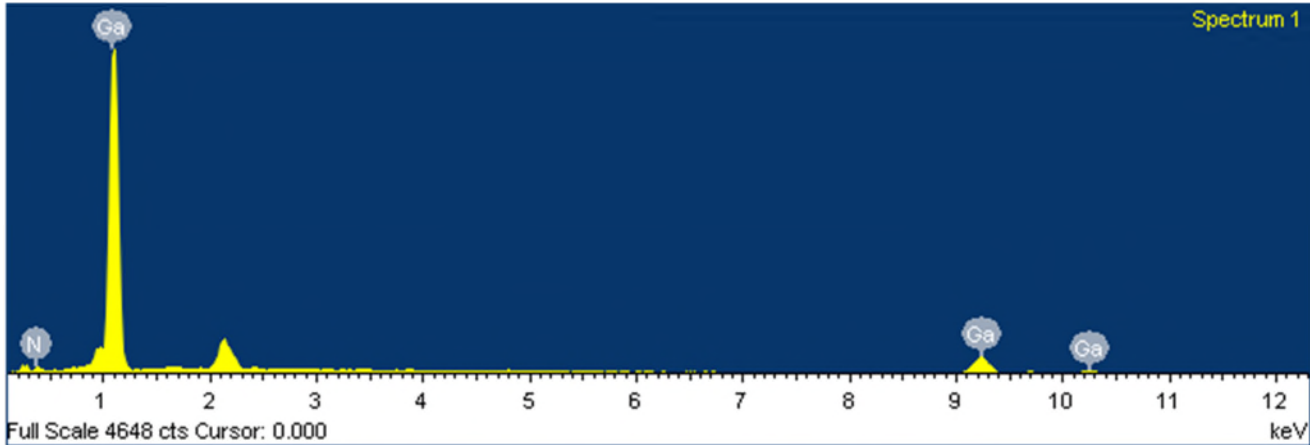
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>a textured district defined on the surface of said substrate</p>	<p><i>Accused component: Substrate of the LED in the lamp.</i> <i>Basis of Infringement Contention: The substrate of the LED contains a textured district defined on the surface of said substrate.</i> <i>SEM Cross-Section of the LED:</i></p>  <p>20.0kV x7.00k 4.29µm</p> <p>← Textured District</p>

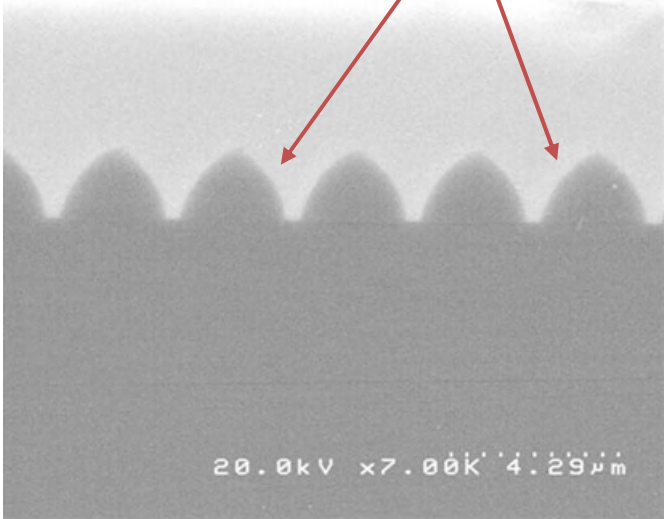
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 282 1220 318"><i>Figure 2B from U.S. Patent No. 6,936,851:</i></p> <div data-bbox="611 464 1745 899"><p data-bbox="1478 493 1745 545">— 24C</p><p data-bbox="1478 639 1745 691">— 22B</p><p data-bbox="1478 802 1745 854">— 20A</p></div> <p data-bbox="953 935 1146 1000">Fig. 2B</p>

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>comprising a plurality of etched trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination;</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i> <i>Basis of Infringement Contention: The textured district comprises a plurality of etched trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination.</i></p> <p>The plurality of etched trenches has sloped etching profiles with a smooth rotation of micro-facets.</p> <div data-bbox="573 500 1890 1218">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>Sloped etching profile (the etched sloped sides of the trench). The sloped etching profile contains a smooth rotation of microfacets.</p> <p>Without a prescribed angle of inclination (the sloped etching profile is without a constant angle of inclination)</p> <p>20.0kV x7.00k 4.29µm</p> </div>

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
a first layer disposed on said textured district;	<p><i>Accused component: The LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The LED comprises a first layer disposed on said textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p>The first layer is disposed on the textured district.</p> 

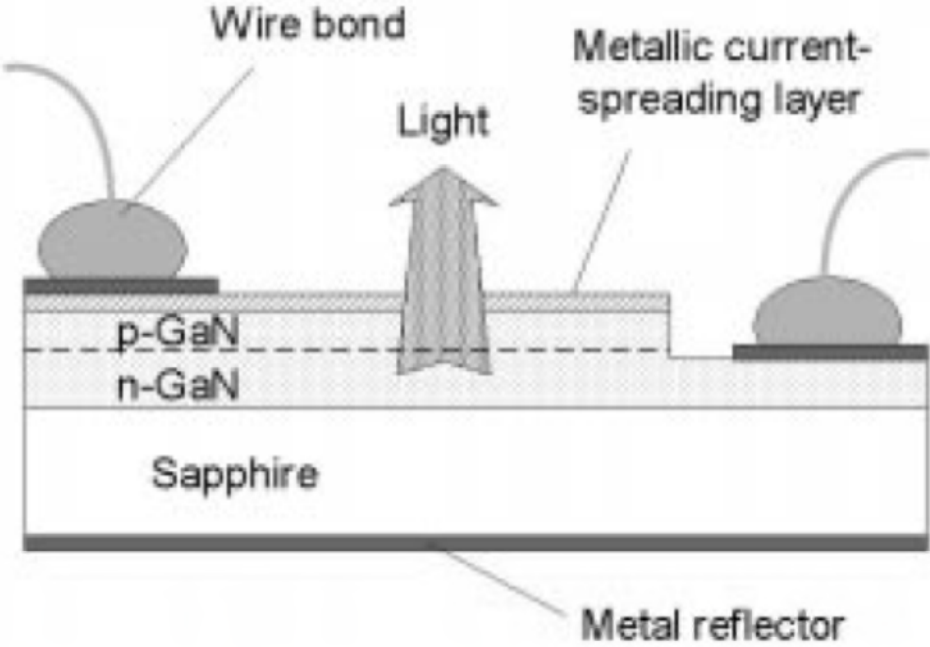
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 279 1730 315"><i>SEM Cross-Section of the LED Identifying the Location of the EDX Measurement:</i></p>  <p data-bbox="680 412 884 451">LOCATION 1</p> <p data-bbox="894 418 940 474">✗</p> <p data-bbox="785 802 1199 834">20.0kV x7.00k 4.29µm</p>

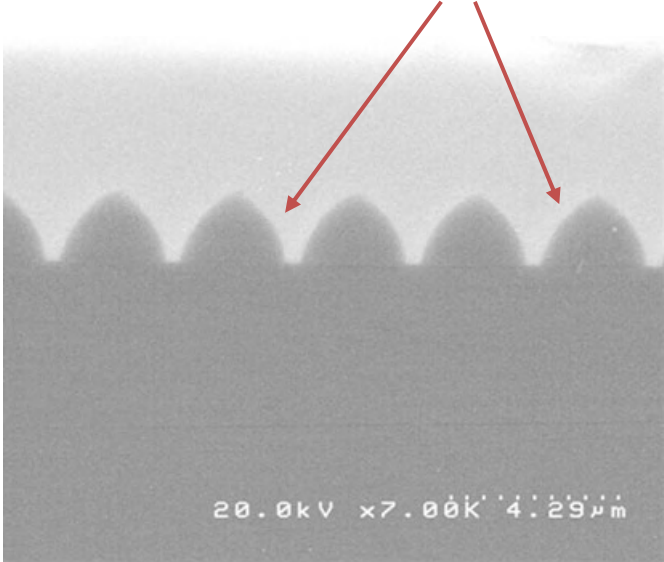
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 279 976 311"><i>EDX Analysis of First Layer:</i></p>  <p data-bbox="863 857 1560 906">First Layer is Gallium Nitride (GaN)</p>

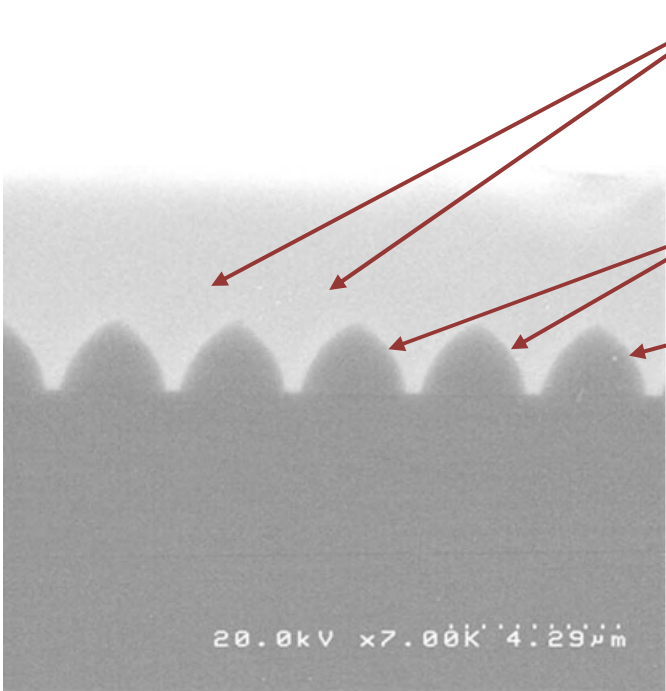
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>comprising a plurality of inclined lower portions,</p>	<p><i>Accused component: The first layer disposed on said textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The first layer comprises a plurality of inclined lower portions so as to guide the extended lattice defects away from propagating into the active layer.</i></p> <p>The first layer has a plurality of inclined lower portions.</p> 

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>said first layer and said substrate form a lattice-mismatched misfit system,</p>	<p><i>Accused component: The LED in the lamp.</i> <i>Basis of Infringement Contention: The first layer and said substrate of the LED form a lattice-mismatched misfit system.</i></p> <p>The Gallium Nitride first layer and Sapphire (Al_2O_3) substrate form a lattice-mismatched misfit system.</p> <p>Epitaxial growth of gallium nitride thin films on A-plane sapphire by molecular beam epitaxy, Center for Photonics Research, College of Engineering, Boston University, Boston, Massachusetts, Journal of Applied Physics, Vol. 85, No. 7, 1 April 1999.</p> <p>I. INTRODUCTION</p> <p>The lack of good quality GaN substrates led to investigation into several different substrates for epitaxial growth of GaN, of which, C-plane (0001) sapphire is the most widely studied substrate. Due to the large lattice mismatch ($\sim 14\%$), several approaches have been adapted to optimize the nucleation and growth of GaN layers on these substrates. Amano</p>
<p>said substrate having at least one of a group consisting of group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire; and</p>	<p><i>Accused component: The LED in the lamp.</i> <i>Basis of Infringement Contention: The substrate is sapphire.</i></p> <p>The substrate is sapphire. The chemical formula of sapphire is aluminum oxide, Al_2O_3.</p>

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>a light-emitting structure containing an active layer disposed on said first layer, whereby said plurality of inclined lower portions are configured to guide extended lattice defects away from propagating into the active layer.</p>	<p><i>Accused component: The LED in the lamp.</i> <i>Basis of Infringement Contention: The light-emitting structure containing an active layer is disposed on said first layer. The first layer comprises a plurality of inclined lower portions so as to guide extended lattice defects away from propagating into the active layer.</i></p> <p>The light-emitting structure containing an active layer is disposed on said first layer.</p> <p>Illumination With Solid State Lighting Technology, Daniel A. Steigerwald, et al., <i>IEEE Journal on Selected Topics in Quantum Electronics</i>, Vol. 8, No. 2, March/April 2002.</p> <p>IV. HIGH POWER LED NITRIDE FLIP-CHIP TECHNOLOGY</p> <p>A. Conventional Indicator LED Device Structures</p> <p>The bulk of commercially available GaN-based devices are grown on sapphire substrates. LEDs have a cross section similar to that depicted in Fig. 8. n-type GaN layers are grown on the substrate, an active layer is grown on top of this, and p-GaN layers are then grown over the top of the structure. Part of the p-GaN and active layers are etched away to reveal and allow the formation of an electrical contact to the underlying n-GaN layers. Light is extracted from these devices through the uppermost p-GaN layers. However, the limited conductivity of</p>

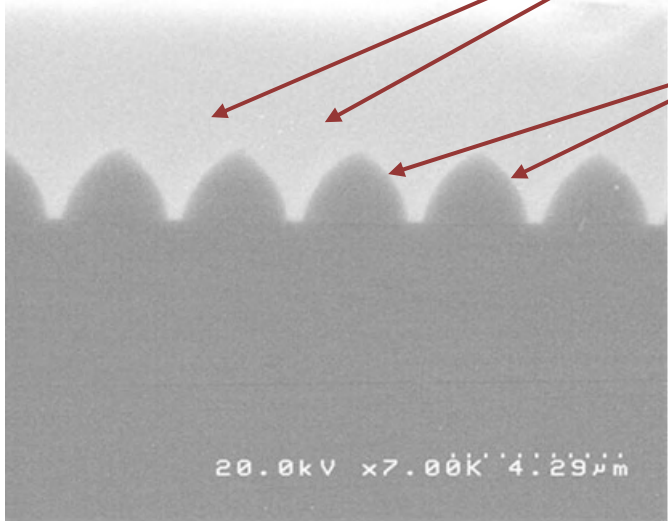
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	 <p>Fig. 8. Diagrammatic cross section through a standard, commercially available GaN-based LED. Light is extracted through a partially absorbing Ni–Au-based layer which acts as both hole-spreading layer and a hole injecting contact to the p-GaN.</p>

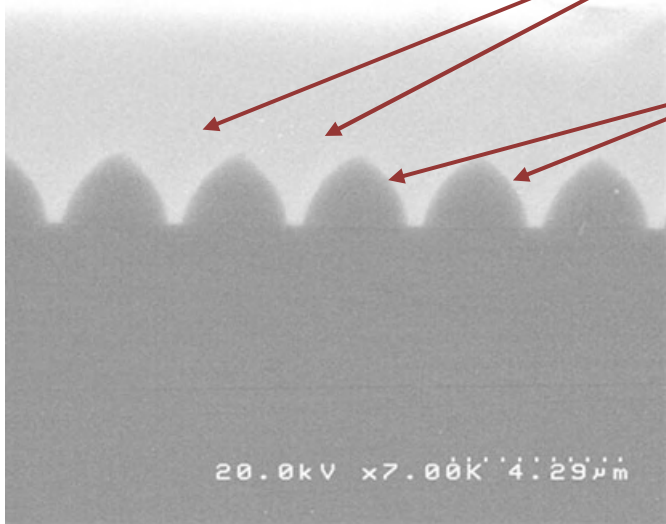
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
	<p data-bbox="575 282 1864 375">The first layer has a plurality of inclined lower portions configured to guide extended lattice defects away from propagating into the active layer.</p>  <p data-bbox="575 976 2001 1045">Plaintiff contends that the inclined lower portions of the first layer disposed on the textured district used in Defendant's LEDs are configured to guide extended lattice defects away from propagating into the active layer.</p>
2. The device of claim 1, wherein said first layer has an upper planar portion with low defect density.	The upper planar portion has low defect density in two respects. First, the defect density in the upper planar portion is lower than the defect density in the lower portion of the layer. Second, the defect density in the upper planar portion is lower than the defect density would have been in the absence of the textured district. The curved side face reduces dislocation density. <i>See, e.g.</i> , U.S. Patent No. 7,759,140 at 6:52-55.
15. A semiconductor light-emitting device comprising:	See claim 1 above.
a substrate;	See claim 1 above.

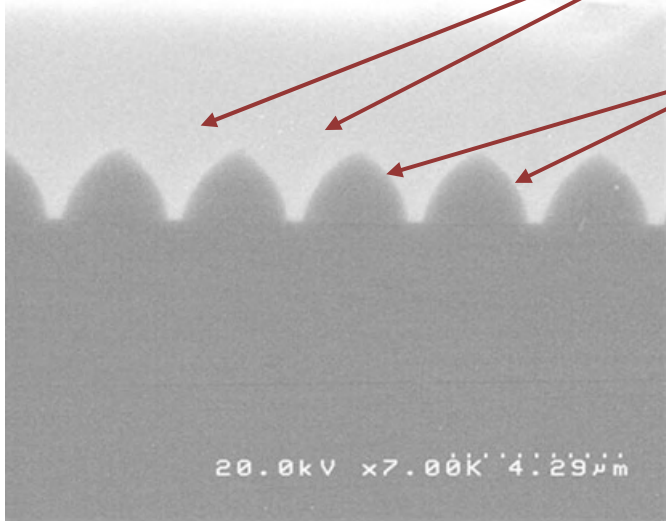
Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
a textured district defined on the surface of said substrate	See claim 1 above.
comprising a plurality of etched trenches having a sloped smooth etching profile without sharp corners and without a prescribed angle of inclination;	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The textured district comprises a plurality of etched trenches having a sloped smooth etching profile without sharp corners and without a prescribed angle of inclination.</i></p>  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>Sloped smooth etching profile (the smooth etched sloped sides of the trench)</p> <p>Without a prescribed angle of inclination (the sloped etching profile is without a constant angle of inclination)</p> <p>20.0kV x7.00K 4.29µm</p>
a first layer disposed on said textured district	See claim 1 above.
comprising a plurality of inclined lower portions,	See claim 1 above.

CLAIM CHART FOR REEXAMINED U.S. PATENT NO. 6,936,851 – Patriot Lighting 3460800 Under Cabinet Puck Light

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
said first layer and said substrate form a lattice-mismatched misfit system,	See claim 1 above.
said substrate having at least one of a group consisting of group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire; and	See claim 1 above.
a light-emitting structure containing an active layer disposed on said first layer, whereby said plurality of inclined lower portions are configured to guide extended lattice defects away from propagating into the active layer.	See claim 1 above.

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>16. The device of claim 15, wherein the sides of said etched trenches are smooth.</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i> <i>Basis of Infringement Contention: The sides of said etched trenches are smooth.</i></p> <div data-bbox="573 402 1850 1092">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>Sides of trenches are smooth.</p> </div>

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>17. The device of claim 15, wherein the sides of said etched trenches are without sharp corners.</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The sides of said etched trenches are without sharp corners.</i></p> <div data-bbox="573 373 1911 1055">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>The sides of said etched trenches are without sharp corners.</p> <p>20.0kV x7.00k 4.29µm</p> </div>

Claim Limitation	Accused Instrumentalities: Patriot Lighting 3460800 Under Cabinet Puck Light
<p>18. The device of claim 15, wherein the sides of said etched trenches are without a prescribed angle of inclination.</p>	<p><i>Accused component: The textured district defined on the surface of the substrate of the LED in the lamp.</i></p> <p><i>Basis of Infringement Contention: The sides of said etched trenches are without a prescribed angle of inclination.</i></p> <div data-bbox="573 386 1919 1057">  <p>Etched trenches (the areas in the surface of the substrate from which some amount of material has been etched away in order to create the pattern on the surface of the substrate)</p> <p>The sides of said etched trenches are without a prescribed angle of inclination.</p> </div>